



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/508,405	09/21/2004	Bjorn Heismann	32860-000784/US	6203

30596 7590 02/23/2006

HARNESS, DICKEY & PIERCE, P.L.C.
P.O.BOX 8910
RESTON, VA 20195

EXAMINER

SANEI, MONA M

ART UNIT PAPER NUMBER

2882

DATE MAILED: 02/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/508,405

Applicant(s)

HEISMANN ET AL.

Examiner

Mona M. Sanei

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 14-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-11 and 14-21 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09212004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities:

- [0018], line 4, replace “includes large” with - -includes a large- -.
- [0023], line 2, delete “particularly reliably to” with - -to reliably- -.
- [0046], line 3, replace “4” with - -3- -.
- [0047], line 2, replace “4” with - -3- -.

Appropriate correction is required.

Claim Objections

Claim 1 is objected to because of the following informalities, which appear to be minor draft errors including grammatical and/or lack of antecedent basis problems.

In the following format (location of objection; suggestion for correction), the following correction(s) may obviate the objection(s):

- Claim 1, line 17, replace “an” with - -wherein the- -.
- Claim 1, line 17, replace “device,” with - -device is- -.

For purposes of examination, the claims have been treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2882

1. Claims 1, 6, 7, 16, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Baba et al. (4,651,005).

Regarding Claims 1, 7, and 21, Baba et al. discloses a system comprising a radiation source (radiation source, Col. 2, line 63; Fig. 1(a), #1) for emission of X-ray radiation with a predetermined intensity and a predetermined spectrum (X-ray source, Col.2, lines 63-64), a detector unit (array, Col. 2, line 64; Fig. 1(a), #3), including a plurality of detectors (radiation sensitive elements, Col. 2, line 66; Fig. 1(a), #5), for verification of X-ray radiation (Col. 2, lines 64-68), wherein individual detectors of the detector unit are designed to receive incident X-ray quanta in the X-ray radiation and to detect the number of X-ray quanta in the received X-ray radiation whose quantum energy exceeds a predetermined threshold value (Col. 2, lines 2-16, Figs. 1(b) and 3(c)), a transmission device (data transmitter, Col. 3, line 51; Fig. 1(b), #11) for transmission of the information detected by the detectors in the detector unit to an evaluation device (computer, Col. 3, line 51; Fig. 1(a), #13), wherein the evaluation device is designed to calculate a measurement result from a measurement object through which the X-ray radiation has passed on the basis of the information detected by the detectors in the detector unit (Col. 5, lines 20-33), wherein the individual detectors in the detector unit are designed to detect both the intensity and the quantum energy of the individual X-ray quanta in the received X-ray radiation (Col. 3, lines 1-14), and, for each measurement period, to emit a spectrum (Fig. 3(c)) which, in addition to information about the number of X-ray quanta of medium quantum energy received in each measurement period, and hence the intensity, also contains information about the respective quantum energy in the X-ray quanta (Col. 4, line 64 to Col. 5, line 2), and thus the spectrum of the received X-ray radiation, wherein the evaluation device is also designed to calculate the measurement result from the measurement object on the basis of the information detected by the detectors relating to the intensity and quantum energy of the individual X-ray quanta in the received X-ray radiation, taking into account the intensity and the spectrum of the X-ray radiation emitted from the radiation source (Col. 5, lines 20-33).

Art Unit: 2882

Regarding Claims 6 and 16, Baba et al. discloses a system wherein the detectors in the detector unit include a direct-conversion (Col. 3, lines 17-18) receiving area for the X-ray radiation, the receiving area being formed from cadmium telluride (CdTe, Col. 3, line 18).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2, 3, 8-11 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baba et al. as applied to Claims 1 and 7 above, and further in view of Mancini et al. (4,537,202).

Regarding Claim 2, Baba et al. discloses all the characteristic features of the present invention as disclosed as recited above. Baba et al. further discloses a system wherein the detectors in the detector unit include a plurality of parallel-connected comparators (plural voltage comparators, Col. 3, line 26; Fig. 1(b), #8a, #8a, ...), each having a threshold value (Col. 3, lines 30-31), and wherein each comparator includes an associated counter (pulse counters, Col. Lines 45-53; Fig. 1(b), #10, #10, ...).

However, Baba et al. fails to disclose a system wherein the comparators are designed to increment the respectively associated counter by one unit when the quantum energy of an X-ray quantum in the received X-ray radiation exceeds the threshold value of the respective comparator.

Mancini et al. discloses a system wherein a comparator (Col. 4, line 33; Fig. 2, #42) is designed to increment (increase, Col. 6, line 66) a respectively associate counter (Col. 4, line 41; Fig. 2, #44) by one unit (Col. 6, lines 66-67) necessarily when the quantum energy of an x-ray quantum in the received x-radiation exceeds the threshold value of the respective comparator.

Art Unit: 2882

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system disclosed by Baba et al. by incorporating the feature disclosed by Mancini et al. when the quantum energy of an X-ray quantum in the received X-ray radiation exceeds the threshold value of the respective comparator.

One would have been motivated to make this modification in order to increase the efficiency of the associated counter (Col. 6, line 58 to Col. 7, line 8) as implied by Mancini et al.

Regarding Claim 3, Baba et al. discloses a system wherein the threshold values of the comparators are freely variable (Col. 5, line 16-19).

Regarding Claim 8, Baba et al. discloses all the characteristic features of the present invention as recited above. Baba et al. further discloses a method comprising detecting a signal (Col. 3, lines 1-14; Fig. 3(c)), produced in the detector, as a consequence of a received x-ray quantum, whose signal level is necessarily proportional to the quantum energy in the received X-ray quantum (Col. 3, line 65 to Col. 4, line 16), and comparing the signal level with a large number of predetermined threshold values (Col. 3, lines 15-44).

However, Baba et al. fails to disclose a method comprising incrementing a counter which is in each case associated with one range between two adjacent threshold values, by one unit when the signal level of the signal is in the range between the two adjacent threshold values.

Mancini et al. discloses a method comprising incrementing (increase, Col. 6, line 66) a counter (Col. 4, line 41; Fig. 2, #44) which is in each case associated with one range between two adjacent threshold values, by one unit (Col. 6, lines 66-67) necessarily when the signal level of the signal is in the range between the two adjacent threshold values.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method disclosed by Baba et al. as recited above by incorporating the feature disclosed by Mancini et al.

One would have been motivated to make this modification in order to increase the efficiency of the associated counter (Col. 6, line 58 to Col. 7, line 8) as implied by Mancini et al.

Regarding Claim 9, Baba et al. discloses all the characteristic features of the present invention as recited above. Baba et al. further discloses a method comprising detecting a signal (Col. 3, lines 1-14; Fig. 3(c)), whose signal level is necessarily proportional to the quantum energy in the received X-ray quantum (Col. 3, line 65 to Col. 4, line 16), and comparing the signal level with a large number of predetermined threshold values (Col. 3, lines 15-44).

However, Baba et al. fails to disclose a method comprising incrementing counters, which are each associated with one threshold value, by one unit when the signal level of the signal exceeds the respective threshold value.

Mancini et al. discloses a method comprising incrementing (increase, Col. 6, line 66) counters (Col. 4, line 41; Fig. 2, #44), which are each associated with one threshold value, by one unit (Col. 6, lines 66-67) necessarily when the signal level of the signal exceeds the respective threshold value.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method disclosed by Baba et al. as recited above by incorporating the feature disclosed by Mancini et al. when the signal level of the signal exceeds the respective threshold value.

One would have been motivated to make this modification in order to increase the efficiency of the associated counter (Col. 6, line 58 to Col. 7, line 8) as implied by Mancini et al.

Regarding Claims 10 and 17, Baba et al. discloses a method wherein a signal (Col. 3, lines 1-14; Fig. 3(c)), which is produced in the detector as a consequence of a received X-ray quantum, is rejected if the determined signal level of the signal is lower than a lowest threshold value (Col. 3, lines 15-44).

Regarding Claims 11 and 18-20, Baba et al. discloses a method wherein the threshold values are freely variable (Col. 5, line 16-19).

Art Unit: 2882

3. Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baba et al. and Mancini et al. as applied to Claims 1 and 2 above, and further in view of Walters et al. (4,288,695).

Baba et al. discloses all the characteristic features of the present invention as recited above.

However, Baba et al. fails to disclose a system wherein the detectors in the detector unit include a receiving area for the X-ray radiation, the receiving area being formed from at least one of gadoliniumoxysulfide ceramic, bismuth germanium oxide and lutetium oxyorthosilicate.

Walters et al. discloses a system wherein the detectors in the detector unit include a receiving area for the X-ray radiation, the receiving area being formed from bismuth germanium oxide (Col. 3, lines 67-68).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system suggested by Baba et al. as modified above by incorporating the feature disclosed by Walters et al.

One would have been motivated to make this modification in order to reduce the dosage received by the patient without degrading the reconstructed image (Col. 2, lines 59-61) as implied by Walters et al.

Allowable Subject Matter

Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art fails to disclose or render obvious a device wherein the detectors in the detector unit include a plurality of pulse logic devices wherein one pulse logic device is connected downstream from the respective comparators and upstream of the respective counters, and wherein the pulse logic devices provide time normalization of the output signals from the comparators, in combination with all the limitations of the claim, intervening claim, and base claim.


Art Unit: 2882

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mona M. Sanei whose telephone number is (571) 272-8657. The examiner can normally be reached on Monday through Friday, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



mms



EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER

